THE NORTHWEST PAVEMENT MANAGEMENT ASSOCIATION NEWSLETTER

'Government and Private Agencies Working Together for Better Pavements'

Chair - Matt Pietrusiewicz | Vice Chair - Dave Shepard | Sec./Treas. - Vicki Griffiths

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Words From The Chair

I would like to take this opportunity to welcome the agencies in Oregon to the NWPMA. Last month at the spring conference, a charter amendment was unanimously passed which accepted Oregon as full members into our association. I am looking forward to a mutually beneficial relationship with our friends from "South of the Border."

A special thanks goes out to Dave Shepard and the crew from Clark County for hosting the Spring Conference. As always, they were both professional and fun hosts. Also, thank you to all who took the time to prepare and make a presentation at the conference.

One of the issues discussed at the conference was how to best utilize this association. The three main avenues of information exchange are the chapter meetings, fall and spring conferences and the monthly newsletter. Although some of the chapters are active, many are not. The fall and spring conferences have been effective, but obviously, there are only two per year. Consequently, this leaves the newsletter as a potentially very useful tool. All of you are encouraged to participate in the information and experience exchange that this newsletter is for.

Matt Pietrusiewicz

New Meeting Schedule For Puget Sound Chapter

NORTHWEST & PUGET SOUND

June 11, 1997 we **will be in King County.**

Jon Cassidy has put together and exciting program. We will enjoy seeing what they (King County) do and how the manage their road system maintenance, how their PMS is working and many other things.

NWPMA is a great organization. We have the power to change whatever we want to change. Unity is the key to change programs, control governmental agencies and to enhance the PMS operation or whatever our association wants to do. Our vision is only as big as you make it. **"Government and Private Agencies Working together for Better Pavements".**

If you have questions about the meetings or have a presentation in the Pavement Technology field, please feel free to call either one of us.

Vicki Griffiths at Skagit County (360) 336-9333 ex 239 or Pat Carroll at Thurston County (360) 754-4580 ex 7818

NWPMA SPRING QUARTERLY

April 22, 1997
Minutes
Clark County

Dave Shepard opened with self-introductions. Matt Pietrusiewicz said the charter will include Oregon. The Fall conference is tentatively set for the 28th, 29th, and 30th of October to be held in Yakima. TransAid will continue to produce a newsletter; please give Matt a call if you would like to see changes in the format. All agencies are requested to add articles, either positive or negative. Send you articles to John Romero, WSDOT, by the end of each month so they'll be included in the following month's newsletter. Keep the articles generic, not specifying brand names. And do keep in touch with other agencies for the transfer of information, such as recommendations or problems.

Idaho is being considered to join the NWPMA; they have had a PM system for more than 10 years. It was suggested they be invited to the Fall conference.

Don Newell of Multnomah County, Oregon, spoke of their PM user group. They have bi-monthly meetings with around 30 people attending, half from the cities and half from the counties, moving around the state for each meeting. They are requesting formal recognition from the NWPMA. Clark County and the northern portion of Oregon will join forces in a user group.

The Association of Oregon is equivalent to CRAB in helping agencies and provide the software "IRIS" which is similar to CRIS. The Oregon Pavement User Group is an affiliate of the Oregon Association County Engineers and Surveyors. They would like to contribute leadership in our group for a return of information from us. The chapters will be arranged so Oregon can be on the Eboard.

Dave Whitcher from CRAB, said Mobility, which will replace CRIS, is scheduled to come out in a Beta system for selected counties and PMS will be included at a later date.

Bill McEntire, Clark County, discussed rating a road with a chip seal over ACP, with the remaining life span not as long as an ACP road. Typically a BST road will last for 7 years while 15 years is average for an ACP road.

Oregon has had good luck with their chip seal program due to using clean rock and smaller sized than what is typically used.

Words from the Chapters:

Southwest Chapter - They've had large annexations and have worked out a program using a contract to inspect the roads visually, structurally, and for coring roads.

Northwest Chapter - They have combined forces with the Puget Sound chapter creating a larger basis to draw information from and to create an interest for surrounding counties to participate.

FarEast Chapter - They've been challenged to encourage counties and cities to join. Howard Hamby suggested using the NWPMA newsletter as a format for counties and cities to keep in touch with each other, again encouraging these agencies to contribute articles. Got a particular problem or question? Submit it in the newsletter and let other agencies respond.

Puget Sound Chapter - With the joining with the Northwest Chapter, the last meeting was a success with many participants. Newt Jackson gave a presentation on pavement recycling in Africa.

There was a discussion about how far into a county road intersection off a state route belongs to the state and where does the county portion begin. Who's responsible for accidents? Please respond in the newsletter if this has occurred in your area.

Vince Kiley, Pierce County, shared his experience with Cape Seals. The road is first chip sealed using 3/8" rock then a year later a slurry seal is applied. Problems occur if there are any shady spots which slows the curing time and adds several hours when residents can't use the road.

What is an average county-wide PSC? Clark County uses 76 as their average.

We all went on a field trip to look at potential roads for Cape Sealing. The roads are alligatored but with no pumping and cracks wider than ¼". Reflective cracking will occur from one three years.

Clark County gave a presentation about their hand-held data collector. Bill McEntire showed the pros and cons of using this equipment with warnings to be careful when entering data so as not to override existing data. There is no paper and pencil involved and the data is downloaded saving the time to enter manually.

Oregon has graciously volunteered to host the 1998 Fall conference.

Dan Sunde, WSDOT, introduced John Romero who will be working on the newsletter. Please give John the material you want published in the NWPMA newsletter. Paul Sachs has returned from family leave. Welcome back, Paul. The counties will have access to CD-ROM's that will contain DOT forms and manuals with a goal of 30 DOT manuals. They will be updated every 6 months and can also be obtained in hard copies.

WSDOT will develop a certification process or criteria that vendors will be required to follow for certification when developing, for example, software of pavement condition rating.

Les Olsen, Chairman of the Automated Data Collection Technical Committee, gave us his report on the "Video/Spatial Data Acquisition Test of Roadside Features". The road is video taped for signs, striping, guardrail, curbs, etc., along with the spatial coordinates of the roadside features. Les is optimistic that this test, with a grant from the FHWA, will be completed by the end of this year.

And the Fall conference. This is tentatively set for the 28th-30th of October in Yakima and Matt Pietrusiewicz is rounding up topics. If you're interested in anything in particular, of course relating to pavements, give him a call. One topic is how does PMS work with YOUR agency. Another: overlay construction design using Darwin (Clark County).

We are all interested in having more cities participate, pass the conference information on to your local cities and encourage them to join us.

A suggestion for the next conference, due to simultaneous sessions, these should be video taped, creating a library for future viewing. A rate-off at the next conference was nixed but ok'd for visual ratings. Again, give Matt a call to let him know what you are interested in learning about.

The input of the annual award of Pavement Manager of the year should come from every agency. If you have a person in mind, list why you think that person should receive the award and send this information to Dave Shepard.

Discussion of using the Internet for promoting PMS included perhaps have a chat room for questions and answers. Do you have topics of interest that you would like for training? Give these topics to CRAB.

If you're interested in having a manual for rating gravel roads and their design, please give Howard Hamby a call.

That's all, folks!

Army Corps of Engineers "Pothole Primer" Is a Good Source Booklet

Road Management Journal

The U.S. Army Corps of Engineers' Cold Regions Research & Engineering Laboratory originally published "Pothole Primer: A Public Administrator's Guide to Understanding and Managing the Pothole Problem" (Special Report 81-21) in September 1981. A revised edition came out in December 1989. Highlighting major causes of pothole problems and their general solutions, authors Robert A. Eaton, Robert H. Joubert, and Edmund A. Wright wrote a highly readable booklet to assist "elected officials and non-engineering administrators of cities, towns, and military facilities . . . in understanding and managing their pothole problems in asphalt pavements." At the time they wrote the booklet, Eaton and Wright worked with the U.S. Army Cold Regions Research & Engineering Laboratory (CRREL) in Hanover, New Hampshire. Joubert was a District Engineer with The Asphalt Institute in Lawrence, Massachusetts. This article summarizes the 28-page booklet.

Authors' Introduction

In an introduction from the authors, Eaton pointed to traffic fatalities, vehicle damage, and wasted gasoline as reasons to address pothole prevention and maintenance issues. Joubert discussed the prevalent attitude that "there's simply nothing that can be done about [potholes]." He disagreed and wrote, "[T]here's a great deal that can be done about eliminating them if we only focus on where and why they have been increasing in recent years."

Financing and Traffic Growth

Automobiles are becoming more fuel-efficient. The downside for local highway departments is that decreasing fuel sales result in decreasing gas tax revenues and less money in highway maintenance coffers. Moreover, inflation increased highway maintenance costs by two to three times during the 1980s.

While money decreased, traffic increased. From 1960 to 1980, as the U.S. population grew by 30 million, motor vehicle registrations increased by 75 million. Use of railroad transportation is down, and increasing numbers of increasingly heavy trucks travel local roads--roads

that were not designed to support such traffic. One result is potholes, especially in the spring when water saturates the roadway's ground support and weakens its ability to stand up to heavy traffic.

Safety--Legal and Public Relations Aspects

Several factors have lead to increased safety concerns related to pothole problems. Small cars, motorcycles, mopeds, and bicycles are becoming more common on today's roads, and all are easily damaged by potholing. Beyond vehicle damage, personal injuries and fatalities may result from pothole-related incidents. Moreover, highway maintenance, especially emergency work done under adverse conditions, exposes highway department employees to injury and death. As injuries and claims have become more frequent, governmental immunity has diminished; and juries are awarding large settlements to plaintiffs.

Public relations concerns demand attention to potholes and other road maintenance problems. The authors called roads and streets "the most visible public facility that affects every citizen's safety, comfort and economy each day of the year."

Weather and Budgets

Asphalt is brittle in cold temperatures. When spring thaws saturate the soil that supports the asphalt, the pavement becomes vulnerable to cracking and breaking as heavy traffic passes over. The more severe the winter weather, the more likely it is there will be a pothole problem. However, the more severe the winter weather, the more likely it is that the road maintenance budget will go for snow removal and nothing will remain for pavement maintenance. To avoid this problem, the authors recommended separate budgets for these two areas of highway maintenance.

Identifying and Cataloging Causes

The authors offered this practical, as opposed to technical, definition of a pothole:

> *any pavement defect involving the surface, or the surface and base, to the extent that it will cause significant noticeable impact on vehicle tires and vehicle handling.*

They listed four causes of potholes:

1. Roads that have insufficient thickness to support traffic during winter/spring thaw cycles without localized failures.
2. Poor drainage, which will usually cause failure in combination with thin pavements, but can also affect thick pavements and new overlays.
3. Failures at utility trenches and castings.
4. Miscellaneous paving defects and cracks left unmaintained or unsealed from water intrusion.

When water and traffic are present at the same time, potholes form in two ways: fatigue failure and raveling failure.

Fatigue failures produce classic, bowl-shaped potholes when water weakens the soil under the pavement and traffic flexes the asphalt up and down until it breaks apart. This process is rare in thicker pavements (three to four inches) and common in thinner pavements of under three inches.

Raveling failures occur when water and traffic wear away adhesive asphalt films and stone aggregate from the surface of the road. Raveling is also common at the edge of the paved roadway or at cracks and joints where pavement has not been properly sealed. Potholes that maintenance crews have filled with cold mixes (liquid asphalt with solvents) on an emergency basis in cold weather often generate raveling failures.

Drainage

Poor drainage is a major contributor to pothole problems. Standing water and subsurface water weaken pavement support and contribute to heaves and cracking from frost penetration and freeze-thaw cycles. The authors felt, "maintenance of drainage features offers the greatest return for most rural counties, towns, and townships in the spending of annual funds for maintenance of roads."

The booklet described several options for improving drainage. Preventive maintenance includes clearing debris and foliage from roadside ditches, storm drains, and culverts. Sometimes paved and lined ditches may be necessary for a permanent drainage solution. Curbs, paved shoulders, and sealed shoulders can help efficient movement of water away from the road, and installing underdrains along shoulders may alleviate drainage problems. Finally, roadway designs that provide for sloped pavements, shoulders, and ditches reduce the number of low spots and improve drainage.

Preventive Maintenance Programs and Pavement Inventories

The authors declared, "A policy of only repairing potholes and blocked drains is not a maintenance program." Detecting early signs of roadway failure and taking prompt preventive maintenance action before potholes form can result in less expensive, more effective road maintenance. Using well-trained crews and limited funds to best advantage requires an expert inspector or engineering aide. Such experts are expensive, but their skill in identifying areas in need of attention will more than pay for them. Comprehensive inventorying of all roads in a local system by pavement type, thickness, and condition of roadway allows highway departments to coordinate and prioritize maintenance efforts for maximum economy and effect.

Utility Cut Control

A study in New York City showed that utility locations accounted for more than 85 percent of pavement defects. This booklet recommended strictly enforced quality control requirements for pavement utility cuts and a first-class system for coordinating installation of underground utilities with roadway resurfacing programs. The latter will help prevent poor communication that can sometimes result in tearing up a road that one crew

resurfaced in July for another crew to make utility improvements in August.

Pothole Patching Procedures

Proper pothole patching requires four steps: (1) removing the surface and base to the level of firm support, (2) applying a coat of tacking material, (3) placing a full-depth patch of asphalt mixture, and (4) compacting and finishing the patch so it is level with surrounding pavement. As shown in the table below, not following these procedures can result in unnecessarily expensive pothole repair.

To achieve the best results, maintenance crews need time and good conditions. Warm, dry weather is ideal. It is essential that crews receive training in timely identification of problems and appropriate use of machinery and materials. Finally, safety is a primary consideration. Crews should wear reflective clothing, work from the center of the road to the shoulder, and receive safety training both for equipment use and traffic control procedures.

The authors completed this section of the booklet by describing patching procedures for pavement that lacks density and for joints, bridge decks, railroad crossings, areas of delamination, and macadam pavements.

intersections, Utility Castings, and Other Common Problem Areas

Intersections, manholes, and other utility castings are "major pothole generators." Numerous utility structures at intersections break up pavement continuity and weaken pavement strength. Starting, stopping, and turning traffic increases wear on intersection pavement. In addition, it is difficult to slope intersections for good drainage. The booklet suggested intersections could be improved by removing the top inch of pavement with a milling machine or heating the surface with infrared heaters. Crews can then rework (overlay) the surface to achieve a smooth finish that drains well.

Manholes and other utility castings require special attention to prevent severe breakout problems. The authors suggested some possible treatments. For thin pavements, a five-foot-diameter transition area around a manhole that thickens the pavement to at least four inches, and preferably to the full casting depth of eight inches, may help prevent deterioration. Some success has been achieved by placing Portland cement concrete collars around castings and filling the top one or two inches with hot asphalt mix.

Training and Education

The American Public Works Association (1313 East 60th Street, Chicago, Illinois, 6063) offers schools, seminars, and conferences to train pavement maintenance practitioners. State associations of highway officials provide valuable opportunities for information sharing. The Asphalt Institute (Lexington, Kentucky 40512-4052) conducts seminars, conferences, and special schools on asphalt pavement. In addition, they offer a complete manual and a slide/tape show on pavement maintenance. Help is also available from trade magazines and journals, such as Better Roads, Rural and Urban Roads, American City & County, and Public Works Journal.

TranSafety Reporter editor's note: Additional sources of current information on the latest materials, methods, and equipment used for patching potholes and other pavement maintenance activities are Local Technical Assistance Program (LTAP) Technology Transfer (T2) newsletters. All 50 states, Washington, D.C., Puerto Rico, and four American Indian transfer centers publish T2 newsletters at least four times a year.

References and Appendix

The booklet concluded with a list of twelve practical references. A four-page appendix called "Materials and Equipment for Patching" described in more technical detail materials and equipment recommended for patching, tacking, and sealing and gave further information on pavement management systems.

(To purchase a copy of "Pothole Primer," call TranSafety, Inc. at l-800-777-2338 or write: TranSafety, Inc., P.O. Box 3100, Sequim, WA 983825006. The booklet sells for $17.00 including shipping and handling.)

NOTE: CRREL will be updating the "Pothole Primer". The new revision will be available in 6 to 9 months. Copies will be available through the T^2 Center by contacting George Crommes at (360 705-7390.

Words From Oregon Chapter

Our next user group meeting is coming up on May 28th in the city of The Dalles, Oregon. This will be our last meeting till the fall so I encourage all to attend. Any one needing directions for the meeting please call Joel. Anyone who is also interested in being put on our mailing list call Joel at (503) 391-7550.

We have also scheduled an all day training class on Thursday, May 29rh in Eugene, Oregon at the Lane County Public Works Building. This training will be on the new MTC windows pavement management system version 7.0 and will be a hands on format, with each person on a computer. Class size is limited to 24 and is being organized by the ODOT/ T2 center (Wes Heindenreich) (503) 986-2854. Any agency that is interested in this class I advise you to call a.s.a.p.

Joel M. Conder
Pavement Management Coordinator
Marion County
Chairperson, Oregon Pavement Users Group

NORTHWEST PAVEMENT MANAGEMENT ASSOCIATION NEWSLETTER POLICY

In an effort to communicate and advance the goals of the Northwest Pavement Management Association (NWPMA), a newsletter shall be published on a regular basis for distribution to the membership. The newsletter shall act as an open forum to communicate and exchange information consistent with the NWPMA goals within the following general policy guidelines:

Articles

Any article of interest to the membership may be printed. Articles should generally pertain to the construction, reconstruction and/or maintenance of pavements or the activities of the NWPMA. All members are encouraged to submit news articles for publication.

Advertising

No advertising by vendors or consultants will be allowed. Vendors and consultants will be listed in the Calendar of Events portion of the newsletter.

Any special circumstances requiring consideration of an exception to the above guidelines will be discussed on a case-by-case basis between the editor and the NWPMA chairman. The final decision on the content of the newsletter will rest with the current NWPMA chairman.

This policy was adopted on December 10.1996.

Nominations for Pavement Manager of the Year

It is that time of year again to send in nominations for the “Pavement Manager of the Year” award. Every agency is encouraged to participate. So if you have someone in mind, list why you think that person should receive the award and send this information to Dave Shepard:

Dave Shepard
4700 NE 78th Street
Vancouver, WA 98665

or Fax (360) 576-0304

Name: _____

Reason for Nomination: _____